Case Report

IJCRR
Section: Healthcare
Sci. Journal
Impact Factor
4.016

ISOLATION OF *MYCOBACTERIUM TUBERCULOSIS COMPLEX* FROM STOOL SPECIMEN IN A RETROVIRAL DISEASE PATIENT

Nilma Hirani[1], Pranali Medhekar[2], Ameeta Joshi[1], Vaishali Wabale[2], Abhay Chowdhary[3]

[1]Associate Professor, Department of Microbiology, Grant Govt Medical College & Sir J J Group of Hospitals, Mumbai 400008, India;
[2]Assistant Professor, Department of Microbiology, Grant Govt Medical College & Sir J J Group of Hospitals, Mumbai 400008, India;
[3]Professor & Head, Department of Microbiology, Grant Govt Medical College & Sir J J Group of Hospitals, Mumbai 400008, India.

ABSTRACT

Amongst various forms of TB, TB of the gastrointestinal tract is the sixth most frequent form of extra-pulmonary TB. Though any part of the gastrointestinal tract can be involved, the most common site of involvement is ileocaecal region. It can have a varied presentation, frequently mimicking other diseases, thus causing delay in diagnosis and management. Therefore a high degree of suspicion along with proper use of diagnostic modalities is essential for timely diagnosis of the disease. Here, we present a case of isolation of a strain of MTB *complex* resistant to rifampicin from stool specimen of a retroviral disease patient diagnosed with abdominal Koch's.

Key Words: Abdominal Koch's, MTB *complex*, Rifampicin resistance

INTRODUCTION

Tuberculosis (TB) can involve any part of the gastrointestinal tract from mouth to anus, the peritoneum and the pancreatobiliary system. It can have a varied presentation, frequently mimicking other diseases.[1,2] Amongst various forms of TB, TB of the gastrointestinal tract is the sixth most frequent form of extra-pulmonary site, after lymphatic, genitourinary, bone and joint, miliary and meningeal tuberculosis as cited by Paustian FF et al[3] and Dabhi L, Suthar H et al.[4] Both the incidence and the severity of abdominal TB are expected to rise with increasing incidence of HIV infection in India.[5]

Isolation of acid fast bacilli (AFB) is the gold standard for diagnosis of pulmonary TB but it may not be possible to establish the diagnosis of various forms of abdominal TB using culture techniques. Diagnosis of abdominal TB is made either on the histological evidence of TB in the tissues (eg. evidence of tubercles with caseation or demonstration of AFB in the lesion.) or typical operative findings suggestive of TB or by using radio-imaging procedures.[6]

Here, we present a case of isolation of *Mycobacterium tuberculosis* from stool specimen of a retroviral disease (RVD) patient with abdominal tuberculosis.

CASE REPORT

A 42-year-old male patient presented with chief complaints of loose motions (10-12 episodes daily) since three months. Patient also complained of body ache and giddiness since two months. He was a known case of RVD on ZLN (Zid ovudine+Lamivudine+Nevirapine) regimen since six years. There was no history of blood in stool, fever with chills, nausea or vomiting. There was no past history of diabetes, hypertension and tuberculosis.

On examination, patient was conscious with vitals stable. Per abdomen examination revealed soft abdomen, no organomegaly.

Results of haemoglobin, complete blood count, renal function tests, liver function tests were within normal limits. Test for HIV 1 antibodies was positive.

Corresponding Author:
Nilma Hirani, Associate Professor, Department of Microbiology, Grant Govt Medical College & Sir J J Group of Hospitals, Mumbai 400008, India.

Received: 02.08.2016 **Revised:** 16.08.2016 **Accepted:** 31.08.2016

Chest X-ray PA view revealed chronic infiltration suggestive of Koch's, though patient did not give any past history of pulmonary TB. USG abdomen revealed thickening of ileocolic junction and caecal wall, minimal interbowel free fluid and mesenteric lymphadenopathy.

Stool sample of this patient was received in TB culture and DST laboratory in sterile container for mycobacterial culture. The stool specimen was subjected to Ziehl-Neelsen staining[7] and direct microscopic examination revealed presence of pus cells along with presence of slender, elongated, curved acid fast bacilli with varied morphology.

The stool specimen was then subjected to decontamination by NALC-NaOH method. Resultant sediment was inoculated onto two slopes of Löwenstein-Jensen(LJ) medium and one slope of Para nitrobenzoic acid(PNB)[8]. The slopes were incubated at 37^{0}C. After initial examination after 72 hours, these slopes were examined weekly.

Solid culture on LJ medium showed slow growth of rough, buff coloured colonies suggestive of *M. tuberculosis* at 6 weeks. PNB slope did not reveal any growth. For drug susceptibility testing (DST), the culture was subjected to both, solid DST by economic variant of 1% proportion method[8] and line probe assay (LPA). LPA is a molecular method based on reverse hybridization technique, used for detection of MTB complex and resistance to Isoniazid (INH) and Rifampicin (RIF).[9] The strain was found to be resistant to RIF and sensitive to INH, ethambutol (ETH) and streptomycin (STR) on solid DST. Results of LPA showed presence of TUB band, thus confirming the identity as MTB *complex*. rpo*B* gene locus for RIF resistance showed absence of wild type 8 band and presence of mutation band 3 representing mutation at codon S531L. All wild type bands were present along with absence of mutation band in katG and inhA gene loci for high level and low level INH resistance respectively. Thus, the strain was reported as resistant to RIF and sensitive to INH.

The patient was diagnosed as a case of abdominal Koch's and anti Koch's treatment (AKT) was started. Since patient showed signs of hepatotoxicity, drug regimen was changed to hepatosafe AKT (Ethambutol+Streptomycin) and was advised monitoing of liver function tests (LFT). Patient was advised shifting to AKT when results of LFT's would be within normal limits. Thereafter, patient was put on extended regimen since rifampicin resistant strain was isolated. He responded to treatment and showed clinical improvement.

DISCUSSION

Abdominal tuberculosis constitutes a major public health problem in developing countries and is associated with significant morbidity and mortality.[10,11] Though any part of the gastrointestinal tract can be involved, the most common site of involvement is ileocaecal region, possibly due to increased physiological stasis, increased rate of fluid and electrolyte absorption, minimal digestive activity and an abundance of lymphoid tissue at this site.[1]

Abdominal TB is a disease that predominantly affects young adults. Two-thirds of all cases involve patients between 21 and 40 years of age. This patient also fits in the above mentioned range. There is no difference in the incidence rate between male and female subjects, although some studies suggest a slightly increased female predisposition.[1]

The postulated mechanisms by which the tubercle bacilli reach the gastrointestinal tract are (i) hematogenous spread from the primary lung focus in childhood with later reactivation (ii) ingestion of bacilli in sputum from active pulmonary focus (iii) direct spread from adjacent organs and iv)through lymphatic channels from infected nodes.[1]

Gastrointestinal tuberculosis constitutes 70-78% cases of abdominal tuberculosis[1]. Ileocaecal area is the most commonly involved site followed by colon and jejunum.[1,12] Rarely tuberculosis may involve stomach, duodenum and oesophagus. The three characteristic intestinal lesions produced in tuberculosis include i) ulcerative ii) hypertrophic and iii) stricturous or constrictive.[12] A combination of these morphological forms may also occur. Most cases of gastrointestinal tuberculosis have associated lymph node and peritoneal involvement. Peritoneal involvement may be in the form of peritoneal adhesions or exudative fluid in the peritoneal cavity (ascites). The nodal involvement in abdominal tuberculosis is mainly mesenteric or retroperitoneal. Lymph nodes may show caseation or calcification.[12]

The clinical presentation may vary from asymptomatic disease (an incidental finding on laparotomy) to acute, acute on chronic or chronic symptomatic disease. The symptomatology mainly includes constitutional symptoms such as fever, malaise, night sweats, loss of weight, weakness in about one-third of patients. Local symptoms and signs such as chronic diarrhoea, constipation, pain in abdomen, vomiting, abdominal distension may be present according to site and type of involvement. Physical examination of abdomen may show signs of ascites, lump in abdomen or visible peristalsis with dilated loops of gut. However, in a large number of cases it may be unrewarding. Because of varied clinical presentations, one or the other form of abdominal tuberculosis may

mimic malignant neoplasms or inflammatory bowel disease. Therefore, a high degree of suspicion along with proper use of diagnostic modalities is essential for timely diagnosis of the disease.[1,6]

Isolation of acid fast bacilli is the gold standard for diagnosis of pulmonary TB, but, may not be possible for establishing the diagnosis of various forms of abdominal TB. New criteria suggested for the diagnosis of abdominal TB by Lingenfelser[13] are as follows: (i) Clinical manifestations suggestive of TB (ii) Imaging evidence indicative of abdominal TB (iii) Histopathological or microbiological evidence of TB and/or (iv) Therapeutic response to treatment.

This is the first report of *M. tuberculosis complex* isolated from stool specimen of a patient diagnosed with abdominal Koch's from the TB culture and DST laboratory in a tertiary care hospital. He was a retroviral disease patient, developed persistent diarrhoea for three months along with constitutional symptoms. There was imaging evidence of abdominal TB as suggested by ileocolic junction and caecal wall thickening and mesenteric lymphadenopathy. Microbiological isolation of the agent is very rare and it has remained under 50% in all the reported series.[14] However in this case we could isolate MTB *complex* from stool specimen and detect rifampicin resistance by performing DST by both solid as well as molecular method (LPA). The isolation of MTB is also essential for performing susceptibility tests, the importance of which is growing because of high incidence of multi drug resistance.[15]

A past history of pulmonary TB is quite frequent in patients with abdominal TB.[16] In this case though patient did not give any past history of pulmonary TB, chest X-ray findings revealed chronic infiltration suggestive of Koch's.

By using clinical, imaging and microbiological evidence, the patient was diagnosed as a case of abdominal TB and AKT was started.

CONCLUSION

Tuberculosis can involve any part of gastrointestinal tract. Symptomatology can be varied and disease often mimics malignancy or inflammatory bowel disease. It can cause delay in diagnosis as well as treatment. Therefore, a strong clinical suspicion along with a combination of imaging, histopathological, microbiological and molecular tests can provide accurate diagnosis of the disease. Microbiological isolation further aids in susceptibility testing for anti-TB drugs, which is important to combat the problem of MDR-TB.

REFERENCES

1. Abdominal tuberculosis Sharma MP, Bhatia V Department of Gastroenterology, All India Institute of Medical Sciences, New Delhi, India Review Article Indian J Med Res 120, October 2004, pp 305-315
2. Peda Veerraju E. Abdominal tuberculosis. In: Satya Sri S, editor. Textbook of pulmonary and extrapulmonary tuberculosis. 3rd ed. New Delhi: Interprint; 1998 p. 250-2.
3. Paustian FF. Tuberculosis of the intestine. In: Bockus HL, editor. Gastroenterology, vol.11, 2nd ed. Philadelphia :W.B. Saunders Co.; 1964 p. 311.
4. CLINICAL DILEMA- ABDOMINAL TUBERCULOSIS Dr. Leena Dabhi, Dr. Hemang Suthar http://themedicalacademy.in/fxconsult1/userfiles/CLINICAL%20DILEMA.pdf
5. Rathi PM, Amarapurakar DN, Parikh SS, Joshi J, Koppikar GV, Amarapurkar AD, *et al*. Impact of human immunodeficiency virus infection on abdominal tuberculosis in western India. *J Clin Gastroenterol* 1997;*24* : 43-8.
6. Chugh SN, Jain V Abdominal tuberculosis: Current concepts in diagnosis and management www.apiindia.orgpdf/medicine_update_2007/102.pdf
7. Revised National Tuberculosis Control Programme: Guidelines on Programmatic Management of Drug Resistant TB (PMDT) in India May 2012
8. Manual of Standard Operating Procedures (SOPs). Culture of *Mycobacterium tuberculosis* and Drug Susceptibility Testing on solid medium. 1-142(2009) available at www.**tbcindia**.org
9. GenoType MTBDR*plus,*version 2.0 (product insert). Nehren, Germany; Hain Lifescience, GmbH. Available from: http://www.hain-lifescience.com/pdf/304xx_pbl.pdf
10. Global tuberculosis control 2012. [Internet]: World Health Organization. (Online) http://www.who.int/tb/publications/global_report/en/index.html Cited 2011 April 11.
11. Wadhwa N, Agarwal S, Mishra K. Reappraisal of abdominal tuberculosis. J Indian Med Assoc. 2004;102:31–32
12. Marks IN. Abdominal tuberculosis baillierers. Clin Trop Med Common Dis 1998;3:329.
13. Lingenfelser T, Zak J, Marks IN, et al. Abdominal tuberculosis;still a potentially lethal disease. Am J Gastroenterol 1993;88:744.
14. Uygur-Bayramiçli O, Dabak G, Dabak R. A clinical dilemma:abdominal tuberculosis. World J Gastroenterol 2003; 9(5):1098-1101
15. Iseman MD. Treatment of multidrug resistant tuberculosis. *N Engl J Med* 1993: 784-791
16. Gorbach SL. Infectious diarrhea and bacterial food poisoning. In: Sleisenger MH, Fordtran JS, eds. Gastrointestinal disease. *Philadelphia: Saunders* 1993: 1128-1161.